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A Method of Determining the Thermal Conductivity of Wall Board and Other Heat Insulating Products Made From Corn-Stalks

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State College on the possible economy of cooking foodstuffs by the direct application of an electric current. Consequently a more complete knowledge of the related physical properties of such materials is essential to the proper development of a satisfactory process.

In this paper are given the results of measurements of the specific heats of some vegetables and of the internal temperatures and electrical resistances of potatoes under the action of different a. c. voltages.

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A METHOD OF DETERMINING THE THERMAL CONDUCTIVITY OF WALL BOARD AND OTHER HEAT INSULATING PRODUCTS MADE FROM CORN-STALKS

HERBERT STILES and HAROLD STILES

The apparatus herein described was designed to measure the thermal conductivity of wall board and other heat insulators made from corn-stalks in the laboratories of the Chemical Engineering Department of Iowa State College.

The essential parts of the apparatus are a boiler, nearly a foot in diameter, in which steam is generated; the top of the boiler being a plane brass plate upon which is placed the specimen to be tested. Upon the specimen is placed a metal container the bottom of which is another brass plate similar to the top of the boiler.

The container has an inner compartment of bakelite about five inches in diameter which is fastened by a water-tight connection to a short brass ring which in turn is soldered to the bottom of the container. The bakelite cylinder which is about five inches high is fitted with a hard rubber lid with a hole in its center for rubber stopper into which is fitted a glass tube the upper part of which has two bulbs one above the other. Two fine marks are etched on the tube, one above and the other below the lower bulb.

The bakelite cyclinder is filled with cracked ice, ice water and a weight to keep the ice against the bottom. The glass tube is filled with ice water well up into the upper bulb. As the ice melts the water sinks in the tube. The times are noted when the water reaches the two etched marks, the volume between which has been carefully measured, and the quantity of heat which has passed into the cylinder during the time interval can be computed.

Ice packed around and above the cylinder prevents the flow of heat into the cylinder from the sides and top and also furnishes a good guard ring at the bottom of the container.

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ELECTRICAL PROPERTIES OF CORN-STALK PRODUCTS

A. A. AARDAL

The Chemical Engineering Department of Iowa State College is doing extensive research work in the utilization of waste products and especially of products made up from corn-stalk. One of these products is maizolith, which resembles hard rubber in many respects.

This investigation deals particularly with the following electrical properties of maizolith; di-electric constant, power factor, specific resistivity and surface resistivity.

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THE CONDUCTIVITY OF COD LIVER OIL

L. W. BUTLER

Experiments have been conducted on the conductivity of cod liver oil under different conditions. These experiments were carried out in a conductivity cell using brass plates placed in some instances about .003 inch apart and at other times at about .020 inch. The temperature of the oil was raised to approximately fifty degrees Centigrade and allowed to cool slowly to three or four degrees below zero Centigrade, readings on the conductivity being made at frequent intervals. The conductivity decreased as the temperature was lowered, the decrease becoming very rapid at the lower temperatures. When the temperature was raised, the conductivity increased, the conductivity-temperature curves being approximately the same in the two cases.

The general shape of all the conductivity-temperature curves obtained with samples of different oils or with samples of the same oil under varying circumstances were the same but the values of the conductivities varied widely. If the oil was left exposed to the

